LESSON PLAN

Course Code& Course Name: T126-Automobile Engineering **A.Y 2015-16**

Programme: B.Tech **Department:** MECHANICAL

SEM: VII(A/s)

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
UNIT-I: INTRODUCTION					
1.	22-06-15	Components of an automobile		1	DM1,DM6
2.	23-06-15	Rear wheel drive,front wheel drive and four wheel drive		1	DM1
3.	25-06-15	Basic engine terminology,Engine cycles		1	DM1
4.	26-06-15	Types of Engines,Automotive gas turbine,Hybrid vehicle,Fuel cell vehicle		1	DM1
5.	27-06-15	working of IC engines		1	DM1
6.	29-06-15	Tutorial		1	DM1
7.	30-06-15	Comparision of SI and CI Engines		1	DM1
8.	02-07-15	Comparision of 4-stroke and 2-stroke Engines		1	DM2
9.	03-07-15	Combustion chambers in SI and CI Engines		1	DM1,DM6
10.	04-07-15	Knocking and Detonation		1	DM1
11.	06-07-15	Tutorial		1	DM1
12.	07-07-15	Engine construction-I		1	DM1
13.	09-07-15	Engine construction-II		1	DM2
14.	10-07-15	Engine construction-III		1	DM1
15.	13-07-15	Engine service and Reboring		1	DM1
16.	14-07-15	Tutorial		1	DM1
UNIT-II:FUEL SUPPLY SYSTEMS IN PETROL AND DIESEL ENGINES					
17	16-07-15	Carburetion,Factors affecting carburetion		1	DM1
18	17-07-15	Air-fuel mixtures,Mixture requirements at different loads and speeds		1	DM1
19	20-07-15	Principle of carburetion,Simple Carburetor		1	DM1
20	21-07-15	Essential parts of Carburetor and Additional systems		1	DM2
21	23-07-15	Zenith and SU type Carburetor		1	DM1
22	24-07-15	Tutorial		1	DM1
23	25-07-15	Fuel supply systems and fuel pumps		1	DM1
24	27-07-15	Gasoline Injection,Timed Injection,Port Injection and Multi point fuel Injection		1	DM1
25	28-07-15	Injection systems in CI Engines and Classification		1	DM1
26	30-07-15	Fuel feed pump and Injection pump		1	DM1
27	31-07-15	Tutorial		1	DM1
28	01-08-15	Governor and Types of		1	DM2

		Governors			
29	03-08-15	Fuel Injector		1	DM1
30	04-08-15	Nozzle,Types of Nozzles and Spray formation		1	DM1
31	06-08-15	Electronic Fuel Injection system and Common rail direct Injection system		1	DM1
32	07-08-15	Tutorial		1	DM3,DM4
		UNIT-III:ENGINE COOLING SYSTEMS, ENGINE LUBRICATION SYSTEMS,IGNITION SYSTEM			
33	10-08-15	Introduction to cooling system and parameters affecting heat transfer		1	DM1
34	11-08-15	Need for cooling system,charecteristics of an cooling system,Types of cooling systems		1	DM1
35	13-08-15	Liquid cooling systems		1	DM1
36	14-08-15	Air cooling systems-Fins,Baffles,comparision of liquid and air cooling systems		1	DM1
37	24-08-15	Tutorial		1	DM1
38	25-08-15	Radiator,Thermostat,Anti freeze solutions		1	DM2
39	27-08-15	Evaporative and pressure cooling system		1	DM1
40	28-08-15	Objectives and requirements of lubricative system,Effect of engine conditions on lubricating oil		1	DM1
41	29-08-15	Petroil and splash lubrication system		1	DM1
42	31-08-15	Tutorial		1	DM1
43	01-09-15	pressure and dry sump lubrication system		1	DM2
44	03-09-15	oil pumps and crank case ventilation		1	DM1
45	04-09-15	Requirements of Ignition system,Battery Ignition system		1	DM4
46	05-09-15	Magneto Ignition system and Electronic ignition system		1	DM1
47	07-09-15	Tutorial		1	DM1
		UNIT-IV:ELECTRICAL SYSTEM, TRANSMISSION			
48	08-09-15	Starting system-Starter motor		1	DM1
49	10-09-15	Bendix drive mechanism,solenoid switch,overrunning clutch drive		1	DM1
50	11-09-15	Lighting system,Horn and wiper		1	DM1
51	14-09-15	Tutorial		1	DM1
52	15-09-15	Clutches-Requirements of		1	DM1

		clutches,principle			
53	18-09-15	cone clutch		1	DM1
54	19-09-15	Single plate clutch,Multi plate clutch		1	DM2
55	21-09-15	Centrifugal clutches		1	DM1
56	22-09-15	Problems on clutches ,clutch Defects		1	DM1
57	25-09-15	Tutorial		1	DM1
58	26-09-15	Transmission-Functions of transmission and Various Resistances		1	DM1
59	28-09-15	Sliding mesh Gear box,constant mesh gear box,synchromesh gear box		1	DM1
60	29-09-15	Automatic transmission-Torque convertor,Transfer box		1	DM1
61	01-10-15	Propeller shaft,Universal joint		1	DM1
62	03-10-15	Tutorial		1	DM1
63	05-10-15	Differential,Rear axle		1	DM1
64	06-10-15	Rear axle drives-Hotch kiss drive,Torque tube drive		1	DM1
		UNIT-V: STEERING SYSTEM, SUSPENSION SYSTEM, BRAKING SYSTEM			
65	08-10-15	Front axle-Types,Steering geometry		1	DM1
66	09-10-15	Correct steering angle-Ackermann mechanism		1	DM1
67	12-10-15	Tutorial		1	DM1
68	13-10-15	Types of Steering gears		1	DM1
69	15-10-15	Power steering,Four wheel steering,wheel alignment,center point steering		1	DM2
70	16-10-15	Suspension system-Leaf springs,Coil springs		1	DM1
71	17-10-15	Torsion bar,shock absorbers,Air suspension		1	DM1
72	26-10-15	Brakes-Types of brakes,drum brakes,disc brakes		1	DM1
73	27-10-15	Hydraulic brakes,Air brakes		1	DM4
74	29-10-15	Tutorial		1	DM1
75	30-10-15	REVISION		1	DM1
76	31-10-15	REVISION		1	DM1
			Total	76	
Total number of classes required to complete the syllabus					**70**
Total number of classes available as per Schedule					**76**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

	LESSON PLAN	
	Course Code& Course Name:T126-Automobile Engineering	**A.Y 2015-16**
	Programme: B.Tech	**Department:** MECHANICAL
	SEM: VII(A/s)	

At the End of the course, students attained the **Course Outcomes:CO1,CO2,CO3,CO4,CO5** & sample proofs are enclosed in Course file.

Signature			
	Name of the Faculty	**Name of Course Co-ordinator**	**HOD**
	A.Naresh Kumar	Dr P Vijay Kumar	Dr K Appa Rao

LESSON PLAN

Course Code& Course Name:T-132 CAD/CAM **SEM:** VII(A/S)

Programme: B.Tech **Department:** ME

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
UNIT-I: Fundamentals of CAD					
1.	23-06-2015	Introduction to CAD/CAM, Computers in manufacturing		1	DM1,DM6
2.	24-06-2015	Product Cycle,		1	DM1
3.	25-06-2015	Product Cycle Revised with Cad/Cam		1	DM1
4.	26-06-2015	The Design process		1	DM1
5.	27-06-2015	**Tutorial-1**			DM2
6.	30-06-2015	Application of computers to Design		1	DM1
7.	01-07-2015	Reasons for implementing cad, Benefits of Cad		1	DM1
8.	02-07-2015	Creating Manufacturing database		1	DM1
9.	03-07-2015	Computer Graphics- Introduction , Database structure		1	DM1,DM6
10.	04-07-2015	**Tutorial-2**			DM2
11.	07-07-2015	Software modules of a graphics system,		1	DM1
12.	08-07-2015	Functions of a graphics package		1	DM1
13.	09-07-2015	Translation, scaling, rotation and problems		1	DM2
14.	10-07-2015	Reflection and concatenated transformations		1	DM1
15.	14-07-2015	problems		1	DM1
16.	15-07-2015	**Tutorial-3**			DM2
UNIT-II:					
17.	16-07-2015	Geometric Modeling: Introduction, Types of geometric models		1	DM1
18.	17-07-2015	Wireframe Modeling: Entities wireframe models		1	DM1
19.	21-07-2015	Curve representation methods		1	DM1
20.	22-07-2015	Parametric representation of analytical curves			
21.	23-07-2015	**Tutorial-4**			DM2
22.	24-07-2015	problems		1	DM1
23.	25-07-2015	Parametric representation of Bezier and B-Spline surfaces		1	DM1
24.	28-07-2015	Surface representation: Entities, models		1	DM1
25.	29-07-2015	Surface representation methods		1	DM1
26.	28-07-2015	Parametric representation of analytical		1	DM1

		surfaces			
27.	30-07-2015	**Tutorial-5**			
28.	31-07-2015	Parametric representation of Bezier B-Spline surfaces		1	DM1
29.	01-08-2015	Parametric representation of B-Spline surfaces		1	DM1
30.	04-08-2015	Solid modeling: Introduction, solidmodels, Fundamentals.		1	DM1
31.	05-08-2015	B-Rep		1	DM1
32.	06-08-2015	CSG		1	DM1
33.	07-08-2015	**Tutorial-6**			DM2
UNIT-III:					
34.	08-08-2015	Numerical control: Introduction, NC Modes		1	DM1
35.	11-08-2015	NC elements, N C Coordinate systems		1	DM1
36.	12-08-2015	Structure of CNC machine tools		1	DM1
37.	13-08-2015	Spindle design and spindle drives,		1	DM1
38.	14-08-2015	**Tutorial-7**		1	DM2
39.	25-08-2015	Feed drives, actuation systems		1	DM1
40.	26-08-2015	CNC Part programming: fundamentals		1	DM1
41.	27-08-2015	Manual part programming		1	DM1
42.	28-08-2015	Computer Aided part programming		1	DM1
43.	29-08-2015	**Tutorial-8**		1	DM2
44.	01-09-2015	Part programming examples		1	DM2
45.	02-09-2015	examples		1	DM1
46.	03-09-2015	examples		1	DM4
UNIT-IV					
47.	04-09-2015	Group Technology: Introduction, Types of grouping parts into families		1	DM1
48.	08-09-2015	**Tutorial-9**		1	DM2
49.	09-09-2015	Coding and classification schemes-OPITZ		1	DM1
50.	10-09-2015	MICLASS,example for coding		1	DM1
51.	10-09-2015	CODE Systems, examples for coding		1	DM1
52.	11-09-2015	Production Flow Analysis, Advantages and limitations		1	DM1
53.	15-09-2015	GT Machine cells, Benefits of GT		1	DM1
54.	16-09-2015	**Tutorial-10**		1	DM2
55.	18-09-2015	CAPP- Retrieval and		1	DM1
56.	19-09-2015	Generative		1	DM1
57.	22-09-2015	Flexible Manufacturing System: Introduction,		1	DM1
58.	23-09-2015	FMS equipment, FMS layouts			
59.	25-09-2015	**Tutorial-11**		1	DM2
60.	26-09-2015	FMS Planning and implementation		1	DM1
61.	29-09-2015	FMS benefits.		1	DM1
UNIT-V					
62.	30-09-2015	CAQC:Introduction,The computers in QC		1	DM1
63.	01-10-2015	Contact inspection methods		1	DM1

64.	03-10-2015	**Tutorial-12**		1	DM2
65.	06-10-2015	Non-Contact inspection methods: Optical		1	DM1
66.	07-10-2015	Non-Contact inspection methods: non optical		1	DM4
67.	08-10-2015	Computer aided testing, Integration of CAQC with CAD/CAM		1	DM1
68.	09-10-2015	**Tutorial-13**		1	DM2
69.	13-10-2015	CIM Introduction		1	DM1
70.	14-10-2015	CIM integration		1	DM1
71.	15-10-2015	CIM Implementation		1	DM6
72.	16-10-2015	Benifits of CIM		1	DM6
73.	17-10-2015	Lean MAnufacturing		1	DM6
74.	27-10-2015	**Tutorial-14**		1	DM2
75.	28-10-2015	Beyond the Syllabus		1	DM6
76.	29-10-2015	Revision		1	
77.	30-10-2015	Revision		1	
78.	31-10-2015	Revision		1	
			Total	78	
Total number of classes required to complete the syllabus					**70**
Total number of classes available as per Schedule					**78**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

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Signature				
	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
	B V BHARGAVI	B V BHARGAVI	Dr S PICHI REDDY	Dr K APPA RAO

LAKIREDDY BALIREDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
DEPARTMENT OF MECHANICAL ENGINEERING

LAB: CAD/CAM LAB **BRANCH: MECHANICAL**

SEMESTER: VII SEM (A/s) **A.Y:2015-16**

NOTIFICATION OF SCHEDULES

S.No	Date	SCHEDULE
1	22-06-2015	Introduction about software
2	29-07-2015	Part drawing of knuckle joint
3	04-07-2015	Assembly of knuckle joint
4	11-07-2015	Part and assembly drawing of Universal coupling
5	18-07-2015	Part and assembly Drawing of Stuffing Box
6	25-07-2015	Part drawing and assembly of Piston
7	06-08-2015	Modeling of Bracket in IRONCAD
8	13-08-2015	Analysis of truss in ANSYS
9	27-08-2015	Analysis of Beam in ANSYS
10	03-09-2015	Analysis of plate with hole using ANSYS
11	10-09-2015	Heat transfer analysis of plate using ANSYS
12	17-09-2015	Part Programming and Machining for step and taper turning on CNC lathe
13	24-09-2015	Part Programming and Machining for linear and circular profiles on CNC MILL
14	05-10-2015	Pick and Place of an object using ARISTRO XT ROBO
15	12-10-2015	Repetition
16	26-10-2015	Internal Lab Exam

Signature of the Faculty **Signature of HOD**

LAKIREDDY BALIREDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
DEPARTMENT OF MECHANICAL ENGINEERING

LAB: CAD/CAM LAB **BRANCH: MECHANICAL**

SEMESTER: VII SEM (A/s) **A.Y:2015-16**

NOTIFICATION OF SCHEDULES

S.No	Date	SCHEDULE
1	22-06-2015	Introduction about software
2	29-07-2015	Part drawing of knuckle joint
3	04-07-2015	Assembly of knuckle joint
4	11-07-2015	Part and assembly drawing of Universal coupling
5	18-07-2015	Part and assembly Drawing of Stuffing Box
6	25-07-2015	Part drawing and assembly of Piston
7	06-08-2015	Modeling of Bracket in IRONCAD
8	13-08-2015	Analysis of truss in ANSYS
9	27-08-2015	Analysis of Beam in ANSYS
10	03-09-2015	Analysis of plate with hole using ANSYS
11	10-09-2015	Heat transfer analysis of plate using ANSYS
12	17-09-2015	Part Programming and Machining for step and taper turning on CNC lathe
13	24-09-2015	Part Programming and Machining for linear and circular profiles on CNC MILL
14	05-10-2015	Pick and Place of an object using ARISTRO XT ROBO
15	12-10-2015	Repetition
16	26-10-2015	Internal Lab Exam

Signature of the Faculty **Signature of HOD**

LESSON PLAN

Course Code& Course Name: T325 & FINITE ELEMENT ANALYSIS **SEM:** VII
Programme: B.Tech **Department**: ME
A.Y:2016-2017 **Section: A/s**

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
UNIT-I:INTRODUCTION TO FINITE METHOD FOR SOLVING FIELD PROBLEMS					
1.	22/6/15	Introduction to Finite Element Method		1	DM1
2.	23/6/15	Field problems, Stresses		1	DM1
3.	24/6/15	Equilibrium equations		1	DM1
4.	26/6/15	Boundary conditions, Problem		1	DM1
5.	27/6/15	Strain Displacement relations		1	DM1
6.	29/6/15	Stress Strain relations, Modelling		1	DM1
7.	30/6/15	Plane stress and plane strain problems		1	DM1
8.	1/7/15	Problems		1	DM1
9.	2/7/15	Problems		1	DM1
10.	4/7/15	Problems		1	DM1
11.	5/7/15	problems		1	DM1
12.	8/7/15	One dimensional problems, FE Modelling		1	DM1
13.	9/7/15	**TUTORIAL-1**		1	DM2
14.		Polynomials, Pascal triangle and Pascal pyramid		1	DM1
15.	11/7/15	Shape functions		1	DM1
16.	13/7/15	Stiffness matrices		1	DM1
17.	14/7/15	Potential energy method		1	DM1
18.	15/7/15	**TUTORIAL-2**		1	DM2
19.	16/7/15	Assembly of GSM & Load vector		1	DM1
20.	20/7/15	Finite Element Equations		1	DM1
21.	21/7/15	Problems		1	DM1
22.	22/7/15	Problems		1	DM1
23.	23/7/15	problems		1	DM1
24.	25/7/15	problems		1	DM1
25.	27/7/15	problems		1	DM1
UNIT-2 ANALYSIS OF BEAMS					
26.	28/7/15	Analysis of Beams: Beam elements		1	DM1
27.	29/7/15	Types, loading		1	DM1
28.	30/7/15	DOF, Boundary conditions		1	DM1
29.	1/8/15	Hermite shape functions		1	DM1
30.	3/8/15	Stiffness matrix for two node DOF per node		1	DM1
31.	4/8/15	**TUTORIAL-3**		1	DM2
32.	5/8/15	Problems		1	DM1
33.	6/8/15	Problems		1	DM1
34.	8/8/15	Problems		1	DM1
35.	10/8/15	Problems		1	DM1
36.	11/8/15	Two dimensional elements(CST)		1	DM1
37.	12/8/15	Boundary conditions		1	DM1
38.	13/8/15	Jacobian, Shape functions		1	DM1
39.	24/8/15	Area of triangles		1	DM1
40.	25/8/15	**TUTORIAL-4**		1	DM2
41.	26/8/15	Problems		1	DM1
42.	27/8/15	Problems		1	DM1
43.	29/8/15	Problems		1	DM1
44.	31/8/15	Problems		1	DM1
UNIT-3 FINITE ELEMENT MODELLING OF AXISYMMETRIC SOLIDS					
45.	1/9/15	Axisymmetric solids , Axisymmetric loading		1	DM1
46.	2/9/15	Finite element modelling		1	DM1
47.	3/9/15	Axisymmetric loading with triangular elements		1	DM1
48.	5/9/15	Problems		1	DM1
49.	7/9/15	2-D four nodded iso-parametric elements		1	DM1

LESSON PLAN

Course Code& Course Name: T325 & FINITE ELEMENT ANALYSIS **SEM:** VII

Programme: B.Tech **Department**: ME

A.Y:2016-2017 **Section: A/s**

50.	8/9/15	Jacobian, shape functions, Problems		1	DM1
51.	10/9/15	**TUTORIAL-5**		1	DM2
52.	12/9/15	Numerical integration, Gauss Quadrature		1	DM1
53.	15/9/15	Problems		1	DM1
54.	16/9/15	2-D four nodded iso-parametric elements		1	DM1
55.	19/9/15	Jacobian, shape functions, Problems		1	DM1
56.	21/9/15	Numerical integration, Gauss Quadrature		1	DM1
57.	22/9/15	Problems		1	DM1
58.	23/9/15	Problems		1	DM1
59.	26/9/15	Problems		1	DM1
60.	28/9/15	Problems		1	DM1
61.	29/9/15	**TUTORIAL-6**		1	DM2
UNIT-4 ONE DIMENSIONAL STEADY STATE HEAT TRANSFER ANALYSIS					
62.	30/9/15	One dimensional analysis of HT problems		1	DM1
63.	1/10/15	Conductivity matrix, boundary conditions		1	DM1
64.	3/10/15	Problems		1	DM1
65	4/10/15	1-D analysis of a fin, Conductivity matrix		1	DM1
66	5/10/15	**TUTORIAL-7**		1	DM2
67	6/10/15	boundary conditions, Problems		1	DM1
68	7/10/15	Problems		1	DM1
69	8/10/15	Problems		1	DM1
70	10/10/15	Problems		1	DM1
71	12/10/15	1-D analysis of a fin, Conductivity matrix		1	DM1
72	14/10/15	boundary conditions, Problems		1	DM1
73	15/10/15	Problems		1	DM1
74	16/10/15	Two dimensional analysis of thin plate		1	DM1
76	18/10/15	Conductivity matrix, boundary conditions		1	DM1
77	20/10/15	Convection matrix, Heat rate vector		1	DM1
78	22/10/15	**TUTORIAL-8**		1	DM2
UNIT-5 DYNAMIC ANALYSIS					
79	24/10/15	Dynamic analysis introduction		1	DM1
80	26/10/15	Formulation		1	DM1
81	27/10/15	Mass matrices, consistent MM, Lumped MM		1	DM1
82	28/10/15	Evaluation of Eigen values and Eigen vectors		1	DM1
83	29/10/15	Problems		1	DM1
84	30/10/15	Problems		1	DM1
85	31/10/15	**TUTORIAL-9**		1	DM2
			Total	85	
Total number of classes required to complete the syllabus					**75**
Total number of classes available as per Schedule					**85**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

At the End of the course, students attained the **Course Outcomes:CO1,CO2,CO3,CO4,CO5** & sample proofs are enclosed in Course file.

Signature			
	Name of the Faculty	**Name of Course Co-ordinator**	**HOD**

LESSON PLAN

Course Name: T251 - METROLOGY **Programme: B.Tech (Section – A)**
SEM: VII **Department: Mechanical**

S No.	Tentative Date	Topics to be covered	Actual Date	No. of classes	Content Delivery Methods
UNIT-I: LINEAR, ANGULAR AND FLAT SURFACE MEASUREMENT					
1	23-06-2015	**Introduction**		1	DM1/DM6
2	24-06-2015	**Linear Measurement:** Standards of measurements		1	DM1/DM6
3	25-06-2015	Line and end Standard		1	DM1/DM6
4	27-06-2015	Slip gauges		1	DM1/DM6
5	27-06-2015	**Tutorial 1**		1	DM2/DM3
6	30-06-2015	Dial indicator		1	DM2/DM3
7	01-07-2015	Micrometers		1	DM1/DM6
8	02-07-2015	**Angular Measurement:** Bevel protractor		1	DM1/DM6 & DM4
9	04-07-2015	Angle slip gauges		1	DM1/DM6
10	04-07-2015	**Tutorial 2**		1	DM2/DM3
11	07-07-2015	spirit levels		1	DM2/DM3
12	08-07-2015	Sine bar		1	DM1/DM6
13	09-07-2015	Rollers and spheres used to determine the tapers		1	DM1/DM6 & DM4
14	11-07-2015	**Flat Surface Measurement:**		1	DM1/DM6
15	11-07-2015	**Tutorial 3**		1	DM2/DM3
16	14-07-2015	Basic principle of straight edge		1	DM2/DM3
17	15-07-2015	Surface plates		1	DM1/DM6
18	16-07-2015	**Optical Measuring Instruments:**		1	DM1/DM6
19	21-07-2015	Tool maker's microscope		1	DM1/DM6
20	22-07-2015	Collimators		1	DM1/DM6
21	23-07-2015	Optical projector		1	DM1/DM6 & DM4
22	25-07-2015	Optical flats and their uses		1	DM2/DM3
23	25-07-2015	interferometer		1	DM1/DM6
24	28-07-2015	**Tutorial 4**		1	DM2/DM3
25	29-07-2015	**Comparators:** Basic principle and applications		1	DM1/DM6
26	30-07-2015	Mechanical Comparators		1	DM1/DM6 & DM4
27	01-08-2015	Electrical Comparators		1	DM1/DM6 & DM4
28	01-08-2015	Electronic comparators.		1	DM2/DM3
29	04-08-2015	**Tutorial 5**		1	DM2/DM3
30	05-08-2015	pneumatic comparators		1	DM1/DM6 & DM4
31	06-08-2015	**Limits and Fits:** Introduction, normal size		1	DM1/DM6 & DM4
32	08-08-2015	Tolerance limits, deviations, allowance & fits		1	DM1/DM6
33	08-08-2015	Unilateral and bilateral tolerance system		1	DM1/DM6 & DM4
34	11-08-2015	Hole and shaft basis systems		1	DM2/DM3
35	12-08-2015	Interchangeability and selective assembly		1	DM1/DM6 & DM4
36	13-08-2015	**Tutorial 6**		1	DM2/DM3
	17-08-2015 to 22-08-2015	**I Mid Examinations**			
37	25-08-2015	Indian standard Institution system		1	DM1/DM6
38	26-08-2015	**Limit Gauges:** Introduction		1	DM1/DM6 & DM4
39	27-08-2015	Taylor's principle		1	DM2/DM3

40	29-08-2015	Design of Go and No Go gauges		1	DM1/DM6 & DM4
41	29-08-2015	**Tutorial 7**		1	DM2/DM3
42	01-09-2015	Plug, ring and snap gauges		1	DM1/DM6 & DM4
43	02-09-2015	Profile and position gauges		1	DM1/DM6 & DM4
44	03-09-2015	**Surface Texture:** Factors effecting surface roughness		1	DM1/DM6
45	08-09-2015	Reasons for controlling surface texture, Differences between surface roughness and surface waviness		1	DM2/DM3
46	09-09-2015	Numerical assessment of surface finish - CLA		1	DM1/DM6 & DM4
47	10-09-2015	R.M.S Values – Ra values and Rz values		1	DM1/DM6
48	12-09-2015	**Tutorial 8**		1	DM2/DM3
49	12-09-2015	Basic principle of profile meter and Talysurf		1	DM1/DM6
50	15-09-2015	ISI symbols for indication of surface finish		1	DM1/DM6 & DM4
51	16-09-2015	**Screw Thread Measurement:** Screw thread terminology		1	DM2/DM3
52	19-09-2015	Errors in screw threads		1	DM1/DM6 & DM4
53	19-09-2015	**Tutorial 9**		1	DM2/DM3
54	22-09-2015	Measurement of various elements of screw threads		1	DM1/DM6
55	23-09-2015	Major diameter, minor diameter, effective diameter		1	DM1/DM6
56	26-09-2015	Pitch flank angle and thread form		1	DM1/DM6 & DM4
57	26-09-2015	**Tutorial 10**		1	DM2/DM3
58	29-09-2015	**Machine Tool alignment Tests:** Requirements of machine tool alignment tests		1	DM1/DM6 & DM4
59	30-09-2015	Alignment tests on lathe		1	DM1/DM6
60	01-10-2015	Alignment tests on lathe		1	DM1/DM6 & DM4
61	03-10-2015	Alignment tests on milling		1	DM1/DM6 & DM4
62	03-10-2015	Alignment tests on milling		1	DM1/DM6
63	06-10-2015	Alignment tests on Drilling machine		1	DM2/DM3
64	07-10-2015	**Gear Measurement:** Gear measuring instruments		1	DM1/DM6 & DM4
65	08-10-2015	**Tutorial 11**		1	DM2/DM3
66	10-10-2015	Gear tooth profile measurement		1	DM1/DM6 & DM4
67	10-10-2015	Measurement of diameter, pitch		1	DM1/DM6
68	13-10-2015	Measurement of pressure angle and tooth thickness		1	DM1/DM6
69	14-10-2015	Parkinson's gear tester		1	DM2/DM3
70	15-10-2015	**Coordinate Measuring Machines:**		1	DM1/DM6 & DM4
71	17-10-2015	Basic principle, types and applications of CMM.		1	DM1/DM6 & DM4
72	17-10-2015	**Tutorial 12**		1	DM2/DM3
	19-10-2015 to 24-10-2015	**DASARA HOLIDAYS**			
73	27-102015	Beyond Syllabus		1	DM1/DM6

					& DM4
74	28-10-2015	Beyond Syllabus		1	DM1/DM6 & DM4
75	29-10-2015	Revision		1	DM2/DM3
76	31-102015	Revision		1	DM1/DM6 & DM4
77	31-10-2015	Revision		1	DM2/DM3
	02-11-2015 to 07-11-2015	**II Mid Examinations**			
	09-11-2015 to 18-11-2015	**Preparation and Practicals**			
	19-11-2015 to 03-12-2015	**End Examinations**			
Total				77	
Total number of classes required to complete the syllabus				**72**	
Total number of classes available as per Schedule				**77**	

NOTE: DELIVERY METHODS (DM):
DM1: Lecture interspersed with discussions/BB
DM2: Tutorial
DM3: Lecture with a Quiz
DM4: Assignment/Test
DM5: Demonstration (laboratory, field visit)
DM6: Presentations/PPT

At the End of the course, students attained the **Course Outcomes: CO1, CO2, CO3, CO4, CO5** & sample proofs are enclosed in Course file.

CO1: Design & use effectively the instruments for measurements of linear, angular & flat surface Measurement.
CO2: Design & use effectively the Optical measuring instruments and Comparators.
CO3: Apply the concepts of Limits and Fits in designing Gauges.
CO4: Analyze measuring systems of surface roughness and screw thread measurement.
CO5: Analyze measuring systems of Gear Measurement and perform alignment/acceptance test effectively.

TEXT BOOK

Engineering Metrology / R.K. Jain / Khanna Publishers.

REFERENCES

1. Engineering Metrology / I C Gupta./ Danpath Rai
2. A text book of Metrology /M. Mahajan/ Dhanpat Rai & Co

	Course Instructor	Course Coordinator	Module Coordinator	Programme Coordinator
Signature				

LAB SCHEDULE

Course Name: METROLOGY & INSTRUMENTATION LAB **Programme: B.Tech VII Sem (A SEC)**
Department: MECHANICAL ENGINEERING **A.Y : 2015-16**

Date	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	A 9	A 10	A 11	A 12
25/06/2015	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration
02/07/2015	M1	M2	M3	M4	M5	M6	In 1	In 2	In 3	In 4	In 5	In 6
09/07/2015	M2	M3	M4	M5	M6	M1	In 2	In 3	In 4	In 5	In 6	In 1
16/07/2015	M3	M4	M5	M6	M1	M2	In 3	In 4	In 5	In 6	In 1	In 2
23/07/2015	M4	M5	M6	M1	M2	M3	In 4	In 5	In 6	In 1	In 2	In 3
30/07/2015	M5	M6	M1	M2	M3	M4	In 5	In 6	In 1	In 2	In 3	In 4
03/08/2015	M6	M1	M2	M3	M4	M5	In 6	In 1	In 2	In 3	In 4	In 5
10/08/2015	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration
24/08/2015	In 1	In 2	In 3	In 4	In 5	In 6	M1	M2	M3	M4	M5	M6
03/09/2015	In 2	In 3	In 4	In 5	In 6	In 1	M2	M3	M4	M5	M6	M1
17/09/2015	In 3	In 4	In 5	In 6	In 1	In 2	M3	M4	M5	M6	M1	M2
24/09/2015	In 4	In 5	In 6	In 1	In 2	In 3	M4	M5	M6	M1	M2	M3
01/10/2015	In 5	In 6	In 1	In 2	In 3	In 4	M5	M6	M1	M2	M3	M4
08/10/2015	In 6	In 1	In 2	In 3	In 4	In 5	M6	M1	M2	M3	M4	M5

	Course Instructor	Lab Incharge	Module Coordinator	Programme Coordinator	HoD
Signature					

LESSON PLAN

Course Code& Course Name: T247 MECHANICAL MEASUREMENTS **SEM:** VII

Programme: B.Tech **Department:** MECH

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
		UNIT-I:			
1.	**1-6-15**	introduction		1	DM1,DM6
2.	**2-6-15**	introduction		1	DM1
3.	**3-6-15**	Fundamental methods of measurements		1	DM1
4.	**5-6-15**	Basic elements of measurement system		1	DM1
5.	**6-6-15**	**Tutorial-1**		1	DM2
6.	**8-6-15**	Generalized measurement system		1	DM1
7.	**9-6-15**	Performance terms		1	DM1
8.	**10-6-15**	Performance terms		1	DM1
9.	**12-6-15**	Basic concepts in dynamic measurements		1	DM1,DM6
10.	**15-6-15**	**Tutorial-2**		1	DM2
11.	**16-6-15**	Causes and types of experimental errors		1	DM1
12.	**17-6-15**	Causes and types of experimental errors		1	DM1
13.	**19-6-15**	Uncertainty analysis		1	DM1
14.	**20-6-15**	Uncertainty analysis		1	DM1
15.	**22-6-15**	**Tutorial-3**		1	DM2
16.	**23-6-15**	Method of least squares		1	DM1
17.	**24-6-15**	Graphical analysis		1	DM4
18	**26-6-15**	Curve fitting		1	DM1
19	**27-6-15**	Curve fitting		1	DM1
20	**29-6-15**	**Tutorial-4**		1	DM2
21		**Unit-2**			
22	**30-6-15**	Introduction of stress and strain measurement		1	DM1
23	**1-7-15**	Strain measurements		1	DM1
24	**3-7-15**	Electrical resistance strain gauge		1	DM1
25	**4-7-15**	Electrical resistance strain gauge		1	DM1
26	**6-7-15**	**Tutorial-5**		1	DM2
27	**7-7-15**	Gauge factor		1	DM1
28	**8-7-15**	Measurement of resistance strain gauge outputs		1	DM1
29	**10-7-15**	Temperature compensation		1	DM1
30	**13-7-15**	Strain-gage rossettes		1	DM1
31	**14-7-15**	**Tutorial-6**		1	DM2
32	**15-7-15**	Introduction of displacement measurement		1	DM1
33	**17-7-15**	classification		1	DM1
34	**20-7-15**	Dimensional measurement		1	DM3,DM4
35	**21-7-15**	Gage blocks		1	DM1
36	**22-7-15**	**Tutorial-7**		1	DM2
37	**24-7-15**	Optical methods		1	DM1

38	**25-7-15**	Optical methods		1	DM1
39	**27-7-15**	Pneumatic gage		1	DM1
40	**28-7-15**	Introduction of Force and Torque measurement		1	DM1
41	**29-7-15**	**Tutorial-8**		1	DM2
42	**31-7-15**	Elastic transducer		1	DM1
43	**1-8-15**	Elastic transducer		1	DM1
44	**3-8-15**	Strain gauge load cells		1	DM1
45	**4-8-15**	Strain gauge load cells		1	DM1
46	**5-8-15**	**Tutorial-9**		1	DM2
47	**7-8-15**	dynamometers		1	DM4
48	**8-8-15**	Classification of dynamometers		1	DM1
49	**10-8-15**	Mechanical dynamometers		1	DM1, DM6
50	**11-8-15**	Hydraulic dynamometers		1	DM1, DM6
51	**12-8-15**	Tutorial-10		1	DM2
52	**14-8-15**	Electrical dynamometer		1	DM1, DM6
53		**Unit-3**			
54	**24-8-15**	Introduction of pressure measurement		1	DM1
55	**25-8-15**	Barometers, Manometers		1	DM1
56	**26-8-15**	Dail type pressure gauge		1	DM1
57	**28-8-15**	**Tutorial-11**		1	DM2
58	**31-8-15**	Pressure transducers		1	DM1
59	**1-9-15**	Pitot-static		1	DM1
60	**2-9-15**	Pitot-static and its characteristics		1	DM1
61	**4-9-15**	Low pressure measurement gauges		1	DM1
62	**7-9-15**	**Tutorial-12**		1	DM2
63	**8-9-15**	Introduction of fluid flow measurement		1	DM1
64	**9-9-15**	rotameter		1	DM1
65	**11-9-15**	Turbine flow meter		1	DM1
66	**14-9-15**	Laser Doppler measurement		1	DM1
65	**15-9-15**	**Tutorial-13**		1	DM2
66	**16-9-15**	Hot-wire anemometer		1	DM1
67	**18-9-15**	Flow visualization methods		1	DM1, DM6
		Unit-4			
68	**19-9-15**	Types of thermometer		1	DM1
69	**21-9-15**	Thermocouples, RTD		1	DM1
70	**22-9-15**	**Tutorial-14**		1	DM2
71	**23-9-15**	thermisters		1	DM1
72	**25-9-15**	pyrometers		1	DM1
73	**26-9-15**	Sling psychrometer		1	DM1, DM6
74	**28-9-15**	Absorption psychrometer		1	DM1, DM6
75	**29-9-15**	**Tutorial-15**		1	DM2
76	**30-9-15**	Dew point temperature		1	DM1
		Unit-5			
77	**3-10-15**	Introduction of speed measurement		1	DM1
78	**5-10-15**	Mechanical tachometers		1	DM1, DM6
79	**6-10-15**	Electrical tachometers		1	DM1, DM6
80	**7-10-15**	**Tutorial-16**		1	DM2

81	**9-10-15**	stroboscope		1	DM1
82	**12-10-15**	Non contact type of tachometer		1	DM1, DM6
83	**14-10-15**	Introduction to vibration and motion measurement		1	DM1
84	**16-10-15**	Elementary vibrometers		1	DM1
85	**17-10-15**	Elementary accelerometer		1	DM1
86	**26-10-15**	Seismic instruments		1	DM1, DM6
87	**27-10-15**	Sound measurement		1	DM1
88	**28-10-15**	revision		1	DM1
89	**30-10-15**	revision		1	DM1
90	**31-10-15**	revision		1	DM1
Total number of classes required to complete the syllabus				**90**	**Prin**
Total number of classes available as per Schedule				**90**	**Prin**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

At the End of the course, students attained the **Course Outcomes:CO1,CO2,CO3,CO4,CO5** & sample proofs are enclosed in Course file.

Signature			
	Name of the Faculty	**Name of Course Co-ordinator**	**HOD**

LESSON PLAN

Course Code& Course Name: T126-Automobile Engineering **A.Y 2015-16**

Programme: B.Tech **Department:** MECHANICAL

SEM: VII(B/s)

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
UNIT-I: INTRODUCTION					
1.	23-06-15	Components of an automobile		1	DM1,DM6
2.	24-06-15	Rear wheel drive,front wheel drive and four wheel drive		1	DM1
3.	25-06-15	Basic engine terminology,Engine cycles		1	DM1
4.	26-06-15	Types of Engines,Automotive gas turbine,Hybrid vehicle,Fuel cell vehicle		1	DM1
5.	27-06-15	working of IC engines		1	DM1
6.	30-06-15	Tutorial		1	DM1
7.	01-07-15	Comparision of SI and CI Engines		1	DM1
8.	02-07-15	Comparision of 4-stroke and 2-stroke Engines		1	DM2
9.	03-07-15	Combustion chambers in SI and CI Engines		1	DM1,DM6
10.	04-07-15	Knocking and Detonation		1	DM1
11.	07-07-15	Tutorial		1	DM1
12.	08-07-15	Engine construction-I		1	DM1
13.	09-07-15	Engine construction-II		1	DM2
14.	10-07-15	Engine construction-III		1	DM1
15.	14-07-15	Engine service and Reboring		1	DM1
16.	15-07-15	Tutorial		1	DM1
UNIT-II:FUEL SUPPLY SYSTEMS IN PETROL AND DIESEL ENGINES					
17	16-07-15	Carburetion,Factors affecting carburetion		1	DM1
18	17-07-15	Air-fuel mixtures,Mixture requirements at different loads and speeds		1	DM1
19	21-07-15	Principle of carburetion,Simple Carburetor		1	DM1
20	22-07-15	Essential parts of Carburetor and Additional systems		1	DM2
21	23-07-15	Zenith and SU type Carburetor		1	DM1
22	24-07-15	Tutorial		1	DM1
23	25-07-15	Fuel supply systems and fuel pumps		1	DM1
24	28-07-15	Gasoline Injection,Timed Injection,Port Injection and Multi point fuel Injection		1	DM1
25	29-07-15	Injection systems in CI Engines and Classification		1	DM1
26	30-07-15	Fuel feed pump and Injection pump		1	DM1
27	31-07-15	Tutorial		1	DM1
28	01-08-15	Governor and Types of		1	DM2

		Governors			
29	04-08-15	Fuel Injector		1	DM1
30	05-08-15	Nozzle,Types of Nozzles and Spray formation		1	DM1
31	06-08-15	Electronic Fuel Injection system and Common rail direct Injection system		1	DM1
32	07-08-15	Tutorial		1	DM3,DM4
		UNIT-III:ENGINE COOLING SYSTEMS, ENGINE LUBRICATION SYSTEMS,IGNITION SYSTEM			
33	11-08-15	Introduction to cooling system and parameters affecting heat transfer		1	DM1
34	12-08-15	Need for cooling system,charecteristics of an cooling system,Types of cooling systems		1	DM1
35	13-08-15	Liquid cooling systems		1	DM1
36	14-08-15	Air cooling systems-Fins,Baffles,comparision of liquid and air cooling systems		1	DM1
37	25-08-15	Tutorial		1	DM1
38	26-08-15	Radiator,Thermostat,Anti freeze solutions		1	DM2
39	27-08-15	Evaporative and pressure cooling system		1	DM1
40	28-08-15	Objectives and requirements of lubricative system,Effect of engine conditions on lubricating oil		1	DM1
41	29-08-15	Petroil and splash lubrication system		1	DM1
42	01-09-15	Tutorial		1	DM1
43	02-09-15	pressure and dry sump lubrication system		1	DM2
44	03-09-15	oil pumps and crank case ventilation		1	DM1
45	04-09-15	Requirements of Ignition system,Battery Ignition system		1	DM4
46	05-09-15	Magneto Ignition system and Electronic ignition system		1	DM1
47	08-09-15	Tutorial		1	DM1
		UNIT-IV:ELECTRICAL SYSTEM, TRANSMISSION			
48	09-09-15	Starting system-Starter motor		1	DM1
49	10-09-15	Bendix drive mechanism,solenoid switch,overrunning clutch drive		1	DM1
50	11-09-15	Lighting system,Horn and wiper		1	DM1
51	15-09-15	Tutorial		1	DM1
52	16-09-15	Clutches-Requirements of		1	DM1

		clutches,principle			
53	18-09-15	cone clutch		1	DM1
54	19-09-15	Single plate clutch,Multi plate clutch		1	DM2
55	22-09-15	Centrifugal clutches		1	DM1
56	23-09-15	Problems on clutches ,clutch Defects		1	DM1
57	25-09-15	Tutorial		1	DM1
58	26-09-15	Transmission-Functions of transmission and Various Resistances		1	DM1
59	29-09-15	Sliding mesh Gear box,constant mesh gear box,synchromesh gear box		1	DM1
60	30-09-15	Automatic transmission-Torque convertor,Transfer box		1	DM1
61	01-10-15	Propeller shaft,Universal joint		1	DM1
62	03-10-15	Tutorial		1	DM1
63	06-10-15	Differential,Rear axle		1	DM1
64	07-10-15	Rear axle drives-Hotch kiss drive,Torque tube drive		1	DM1
		UNIT-V: STEERING SYSTEM, SUSPENSION SYSTEM, BRAKING SYSTEM			
65	08-10-15	Front axle-Types,Steering geometry		1	DM1
66	09-10-15	Correct steering angle-Ackermann mechanism		1	DM1
67	13-10-15	Tutorial		1	DM1
68	14-10-15	Types of Steering gears		1	DM1
69	15-10-15	Power steering,Four wheel steering,wheel alignment,center point steering		1	DM2
70	16-10-15	Suspension system-Leaf springs,Coil springs		1	DM1
71	17-10-15	Torsion bar,shock absorbers,Air suspension		1	DM1
72	27-10-15	Brakes-Types of brakes,drum brakes,disc brakes		1	DM1
73	28-10-15	Hydraulic brakes,Air brakes		1	DM4
74	29-10-15	Tutorial		1	DM1
75	30-10-15	REVISION		1	DM1
76	31-10-15	REVISION		1	DM1
			Total	76	
Total number of classes required to complete the syllabus					**70**
Total number of classes available as per Schedule					**76**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

	LESSON PLAN	
	Course Code& Course Name:T126-Automobile Engineering	**A.Y 2015-16**
	Programme: B.Tech	**Department:** MECHANICAL
	SEM: VII(B/s)	

At the End of the course, students attained the **Course Outcomes:CO1,CO2,CO3,CO4,CO5** & sample proofs are enclosed in Course file.

Signature			
	Name of the Faculty	**Name of Course Co-ordinator**	**HOD**
	A.Naresh Kumar	Dr P Vijay Kumar	Dr K Appa Rao

LESSON PLAN

Course Code& Course Name:T-132 CAD/CAM **SEM:** VII(B/S)

Programme: B.Tech **Department:** ME

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
UNIT-I: Fundamentals of CAD					
1.	23-06-2015	Introduction to CAD/CAM, Computers in manufacturing		1	DM1,DM6
2.	24-06-2015	Product Cycle,		1	DM1
3.	25-06-2015	Product Cycle Revised with Cad/Cam		1	DM1
4.	26-06-2015	The Design process		1	DM1
5.	27-06-2015	**Tutorial-1**			DM2
6.	30-06-2015	Application of computers to Design		1	DM1
7.	01-07-2015	Reasons for implementing cad, Benefits of Cad		1	DM1
8.	02-07-2015	Creating Manufacturing database		1	DM1
9.	03-07-2015	Computer Graphics- Introduction , Database structure		1	DM1,DM6
10.	04-07-2015	**Tutorial-2**			DM2
11.	07-07-2015	Software modules of a graphics system,		1	DM1
12.	08-07-2015	Functions of a graphics package		1	DM1
13.	09-07-2015	Translation, scaling, rotation and problems		1	DM2
14.	10-07-2015	Reflection and concatenated transformations		1	DM1
15.	14-07-2015	problems		1	DM1
16.	15-07-2015	**Tutorial-3**			DM2
UNIT-II:					
17.	16-07-2015	Geometric Modeling: Introduction, Types of geometric models		1	DM1
18.	17-07-2015	Wireframe Modeling: Entities wireframe models		1	DM1
19.	21-07-2015	Curve representation methods		1	DM1
20.	22-07-2015	Parametric representation of analytical curves			
21.	23-07-2015	**Tutorial-4**			DM2
22.	24-07-2015	problems		1	DM1
23.	25-07-2015	Parametric representation of Bezier and B-Spline surfaces		1	DM1
24.	28-07-2015	Surface representation: Entities, models		1	DM1
25.	29-07-2015	Surface representation methods		1	DM1
26.	28-07-2015	Parametric representation of analytical		1	DM1

		surfaces			
27.	30-07-2015	**Tutorial-5**			
28.	31-07-2015	Parametric representation of Bezier B-Spline surfaces		1	DM1
29.	01-08-2015	Parametric representation of B-Spline surfaces		1	DM1
30.	04-08-2015	Solid modeling: Introduction, solidmodels, Fundamentals.		1	DM1
31.	05-08-2015	B-Rep		1	DM1
32.	06-08-2015	CSG		1	DM1
33.	07-08-2015	**Tutorial-6**			DM2
UNIT-III:					
34.	08-08-2015	Numerical control: Introduction, NC Modes		1	DM1
35.	11-08-2015	NC elements, N C Coordinate systems		1	DM1
36.	12-08-2015	Structure of CNC machine tools		1	DM1
37.	13-08-2015	Spindle design and spindle drives,		1	DM1
38.	14-08-2015	**Tutorial-7**		1	DM2
39.	25-08-2015	Feed drives, actuation systems		1	DM1
40.	26-08-2015	CNC Part programming: fundamentals		1	DM1
41.	27-08-2015	Manual part programming		1	DM1
42.	28-08-2015	Computer Aided part programming		1	DM1
43.	29-08-2015	**Tutorial-8**		1	DM2
44.	01-09-2015	Part programming examples		1	DM2
45.	02-09-2015	examples		1	DM1
46.	03-09-2015	examples		1	DM4
UNIT-IV					
47.	04-09-2015	Group Technology: Introduction, Types of grouping parts into families		1	DM1
48.	08-09-2015	**Tutorial-9**		1	DM2
49.	09-09-2015	Coding and classification schemes-OPITZ		1	DM1
50.	10-09-2015	MICLASS,example for coding		1	DM1
51.	10-09-2015	CODE Systems, examples for coding		1	DM1
52.	11-09-2015	Production Flow Analysis, Advantages and limitations		1	DM1
53.	15-09-2015	GT Machine cells, Benefits of GT		1	DM1
54.	16-09-2015	**Tutorial-10**		1	DM2
55.	18-09-2015	CAPP- Retrieval and		1	DM1
56.	19-09-2015	Generative		1	DM1
57.	22-09-2015	Flexible Manufacturing System: Introduction,		1	DM1
58.	23-09-2015	FMS equipment, FMS layouts			
59.	25-09-2015	**Tutorial-11**		1	DM2
60.	26-09-2015	FMS Planning and implementation		1	DM1
61.	29-09-2015	FMS benefits.		1	DM1
UNIT-V					
62.	30-09-2015	CAQC:Introduction,The computers in QC		1	DM1
63.	01-10-2015	Contact inspection methods		1	DM1

64.	03-10-2015	**Tutorial-12**		1	DM2
65.	06-10-2015	Non-Contact inspection methods: Optical		1	DM1
66.	07-10-2015	Non-Contact inspection methods: non optical		1	DM4
67.	08-10-2015	Computer aided testing, Integration of CAQC with CAD/CAM		1	DM1
68.	09-10-2015	**Tutorial-13**		1	DM2
69.	13-10-2015	CIM Introduction		1	DM1
70.	14-10-2015	CIM integration		1	DM1
71.	15-10-2015	CIM Implementation		1	DM6
72.	16-10-2015	Benifits of CIM		1	DM6
73.	17-10-2015	Lean MAnufacturing		1	DM6
74.	27-10-2015	**Tutorial-14**		1	DM2
75.	28-10-2015	Beyond the Syllabus		1	DM6
76.	29-10-2015	Revision		1	
77.	30-10-2015	Revision		1	
78.	31-10-2015	Revision		1	
			Total	78	
Total number of classes required to complete the syllabus					**70**
Total number of classes available as per Schedule					**78**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

At the End of the course, students attained the **Course Outcomes:CO1,CO2,CO3,CO4,CO5** & sample proofs are enclosed in Course file.

Signature				
	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
	A NAGESWARA RAO	B V BHARGAVI	Dr S PICHI REDDY	Dr K APPA RAO

LAKIREDDY BALIREDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
DEPARTMENT OF MECHANICAL ENGINEERING

LAB: CAD/CAM LAB **BRANCH: MECHANICAL**

SEMESTER: VII SEM (B/s) **A.Y:2015-16**

NOTIFICATION OF SCHEDULE

S.No	Date	SCHEDULE
1	26-06-2015	Introduction about software
2	03-07-2015	Part drawing of knuckle joint
3	10-07-2015	Assembly of knuckle joint
4	17-07-2015	Part and assembly drawing of Universal coupling
5	24-07-2015	Part and assembly Drawing of Stuffing Box
6	31-07-2015	Part drawing and assembly of Piston
7	07-08-2015	Modeling of Bracket in IRONCAD
8	14-08-2015	Analysis of truss in ANSYS
9	28-08-2015	Analysis of Beam in ANSYS
10	04-09-2015	Analysis of plate with hole using ANSYS
11	11-09-2015	Heat transfer analysis of plate using ANSYS
12	18-09-2015	Part Programming and Machining for step and taper turning on CNC lathe
13	25-09-2015	Part Programming and Machining for linear and circular profiles on CNC MILL
14	09-10-2015	Pick and Place of an object using ARISTRO XT ROBO
15	16-10-2015	Repetition
16	30-10-2015	Internal Lab Exam

Signature of the Faculty **Signature of HOD**

LESSON PLAN

Course Code& Course Name: T325 & FINITE ELEMENT ANALYSIS **SEM:** VII

Programme: B.Tech **Department**: ME

A.Y:2016-2017 **Section: B/s**

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
UNIT-I:INTRODUCTION TO FINITE METHOD FOR SOLVING FIELD PROBLEMS					
1.	22/6/15	Introduction to Finite Element Method		1	DM1
2.	23/6/15	Field problems, Stresses		1	DM1
3.	24/6/15	Equilibrium equations		1	DM1
4.	26/6/15	Boundary conditions, Problem		1	DM1
5.	27/6/15	Strain Displacement relations		1	DM1
6.	29/6/15	Stress Strain relations, Modelling		1	DM1
7.	30/6/15	Plane stress and plane strain problems		1	DM1
8.	1/7/15	Problems		1	DM1
9.	3/7/15	Problems		1	DM1
10.	4/7/15	Problems		1	DM1
11.	6/7/15	problems		1	DM1
12.	7/7/15	One dimensional problems, FE Modelling		1	DM1
13.	8/7/15	**TUTORIAL-1**		1	DM2
14.	10/7/15	Polynomials, Pascal triangle and Pascal pyramid		1	DM1
15.	11/7/15	Shape functions		1	DM1
16.	13/7/15	Stiffness matrices		1	DM1
17.	14/7/15	Potential energy method		1	DM1
18.	15/7/15	**TUTORIAL-2**		1	DM2
19.	20/7/15	Assembly of GSM & Load vector		1	DM1
20.	21/7/15	Finite Element Equations		1	DM1
21.	22/7/15	Problems		1	DM1
22.	24/7/15	Problems		1	DM1
23.	25/7/15	problems		1	DM1
24.	27/7/15	problems		1	DM1
25.	28/7/15	problems		1	DM1
UNIT-2 ANALYSIS OF BEAMS					
26.	29/7/15	Analysis of Beams: Beam elements		1	DM1
27.	31/7/15	Types, loading		1	DM1
28.	1/8/15	DOF, Boundary conditions		1	DM1
29.	3/8/15	Hermite shape functions		1	DM1
30.	4/8/15	Stiffness matrix for two node DOF per node		1	DM1
31.	5/8/15	**TUTORIAL-3**		1	DM2
32.	7/8/15	Problems		1	DM1
33.	6/8/15	Problems		1	DM1
34.	8/8/15	Problems		1	DM1
35.	10/8/15	Problems		1	DM1
36.	11/8/15	Two dimensional elements(CST)		1	DM1
37.	12/8/15	Boundary conditions		1	DM1
38.	14/8/15	Jacobian, Shape functions		1	DM1
39.	24/8/15	Area of triangles		1	DM1
40.	25/8/15	**TUTORIAL-4**		1	DM2
41.	26/8/15	Problems		1	DM1
42.	28/8/15	Problems		1	DM1
43.	29/8/15	Problems		1	DM1
44.	31/8/15	Problems		1	DM1
UNIT-3 FINITE ELEMENT MODELLING OF AXISYMMETRIC SOLIDS					
45.	1/9/15	Axisymmetric solids , Axisymmetric loading		1	DM1
46.	2/9/15	Finite element modelling		1	DM1
47.	4/9/15	Axisymmetric loading with triangular elements		1	DM1
48.	7/9/15	Problems		1	DM1
49.	8/9/15	2-D four nodded iso-parametric elements		1	DM1
50.	9/9/15	Jacobian, shape functions, Problems		1	DM1
51.	11/9/15	**TUTORIAL-5**		1	DM2

52.	12/9/15	Numerical integration, Gauss Quadrature		1	DM1
53.	14/9/15	Problems		1	DM1
54.	15/9/15	2-D four nodded iso-parametric elements		1	DM1
55.	16/9/15	Jacobian, shape functions, Problems		1	DM1
56.	18/9/15	Numerical integration, Gauss Quadrature		1	DM1
57.	19/9/15	Problems		1	DM1
58.	21/9/15	Problems		1	DM1
59.	22/9/15	Problems		1	DM1
60.	23/9/15	Problems		1	DM1
61.	25/9/15	**TUTORIAL-6**		1	DM2
UNIT-4 ONE DIMENSIONAL STEADY STATE HEAT TRANSFER ANALYSIS					
62.	26/9/15	One dimensional analysis of HT problems		1	DM1
63.	28/9/15	Conductivity matrix, boundary conditions		1	DM1
64.	29/9/15	Problems		1	DM1
65	30/9/15	1-D analysis of a fin, Conductivity matrix		1	DM1
66	3/10/15	**TUTORIAL-7**		1	DM2
67	5/10/15	boundary conditions, Problems		1	DM1
68	6/10/15	Problems		1	DM1
69	7/10/15	Problems		1	DM1
70	8/10/15	Problems		1	DM1
71	9/10/15	1-D analysis of a fin, Conductivity matrix		1	DM1
72	10/10/15	boundary conditions, Problems		1	DM1
73	12/10/15	Problems		1	DM1
74	13/10/15	Two dimensional analysis of thin plate		1	DM1
76	14/10/15	Conductivity matrix, boundary conditions		1	DM1
77	16/10/15	Convection matrix, Heat rate vector		1	DM1
78	17/10/15	**TUTORIAL-8**		1	DM2
UNIT-5 DYNAMIC ANALYSIS					
79	18/10/15	Dynamic analysis introduction		1	DM1
80	20/10/15	Formulation		1	DM1
81	26/10/15	Mass matrices, consistent MM, Lumped MM		1	DM1
82	27/10/15	Evaluation of Eigen values and Eigen vectors		1	DM1
83	28/10/15	Problems		1	DM1
84	30/10/15	Problems		1	DM1
85	31/10/15	**TUTORIAL-9**		1	DM2
			Total	85	
Total number of classes required to complete the syllabus					**75**
Total number of classes available as per Schedule					**85**

LESSON PLAN

Course Name: T251 - METROLOGY **Programme: B.Tech (Section – B)**
SEM: VII **Department: Mechanical**

S No.	Tentative Date	Topics to be covered	Actual Date	No. of classes	Content Delivery Methods
UNIT-I: LINEAR, ANGULAR AND FLAT SURFACE MEASUREMENT					
1	22-06-2015	**Introduction**		1	DM1/DM6
2	23-06-2015	**Linear Measurement:** Standards of measurements		1	DM1/DM6
3	24-06-2015	Line and end Standard		1	DM1/DM6
4	25-06-2015	Slip gauges		1	DM1/DM6
5	27-06-2015	**Tutorial 1**		1	DM2/DM3
6	29-06-2015	Dial indicator		1	DM2/DM3
7	30-06-2015	Micrometers		1	DM1/DM6
8	01-07-2015	**Angular Measurement:** Bevel protractor		1	DM1/DM6 & DM4
9	02-07-2015	Angle slip gauges		1	DM1/DM6
10	04-07-2015	**Tutorial 2**		1	DM2/DM3
11	06-07-2015	spirit levels		1	DM2/DM3
12	07-07-2015	Sine bar		1	DM1/DM6
13	08-07-2015	Rollers and spheres used to determine the tapers		1	DM1/DM6 & DM4
14	09-07-2015	**Flat Surface Measurement:**		1	DM1/DM6
15	11-07-2015	**Tutorial 3**		1	DM2/DM3
16	13-07-2015	Basic principle of straight edge		1	DM2/DM3
17	14-07-2015	Surface plates		1	DM1/DM6
18	15-07-2015	**Optical Measuring Instruments:**		1	DM1/DM6
19	16-07-2015	Tool maker's microscope		1	DM1/DM6
20	20-07-2015	Collimators		1	DM1/DM6
21	21-07-2015	Optical projector		1	DM1/DM6 & DM4
22	22-07-2015	Optical flats and their uses		1	DM2/DM3
23	23-07-2015	interferometer		1	DM1/DM6
24	25-07-2015	**Tutorial 4**		1	DM2/DM3
25	27-07-2015	**Comparators:** Basic principle and applications		1	DM1/DM6
26	28-07-2015	Mechanical Comparators		1	DM1/DM6 & DM4
27	29-07-2015	Electrical Comparators		1	DM1/DM6 & DM4
28	30-07-2015	Electronic comparators.		1	DM2/DM3
29	01-08-2015	**Tutorial 5**		1	DM2/DM3
30	03-08-2015	pneumatic comparators		1	DM1/DM6 & DM4
31	04-08-2015	**Limits and Fits:** Introduction, normal size		1	DM1/DM6 & DM4
32	05-08-2015	Tolerance limits, deviations, allowance & fits		1	DM1/DM6
33	06-08-2015	Unilateral and bilateral tolerance system		1	DM1/DM6 & DM4
34	08-08-2015	Hole and shaft basis systems		1	DM2/DM3
35	10-08-2015	Interchangeability and selective assembly		1	DM1/DM6 & DM4
36	11-08-2015	**Tutorial 6**		1	DM2/DM3
37	12-08-2015	Indian standard Institution system		1	DM1/DM6
38	13-08-2015	**Limit Gauges:** Introduction		1	DM1/DM6 & DM4
	17-08-2015 to 22-08-2015	**I Mid Examinations**			
39	24-08-2015	Taylor's principle		1	DM2/DM3

40	25-08-2015	Design of Go and No Go gauges		1	DM1/DM6 & DM4
41	26-08-2015	**Tutorial 7**		1	DM2/DM3
42	27-08-2015	Plug, ring and snap gauges		1	DM1/DM6 & DM4
43	29-08-2015	Profile and position gauges		1	DM1/DM6 & DM4
44	31-08-2015	**Surface Texture:** Factors effecting surface roughness		1	DM1/DM6
45	01-09-2015	Reasons for controlling surface texture, Differences between surface roughness and surface waviness		1	DM2/DM3
46	02-09-2015	Numerical assessment of surface finish - CLA		1	DM1/DM6 & DM4
47	03-09-2015	R.M.S Values – Ra values and Rz values		1	DM1/DM6
48	07-09-2015	**Tutorial 8**		1	DM2/DM3
49	08-09-2015	Basic principle of profile meter and Talysurf		1	DM1/DM6
50	09-09-2015	ISI symbols for indication of surface finish		1	DM1/DM6 & DM4
51	10-09-2015	**Screw Thread Measurement:** Screw thread terminology		1	DM2/DM3
52	12-09-2015	Errors in screw threads		1	DM1/DM6 & DM4
53	14-09-2015	**Tutorial 9**		1	DM2/DM3
54	15-09-2015	Measurement of various elements of screw threads		1	DM1/DM6
55	16-09-2015	Major diameter, minor diameter, effective diameter		1	DM1/DM6
56	19-09-2015	Pitch flank angle and thread form		1	DM1/DM6 & DM4
57	21-09-2015	**Tutorial 10**		1	DM2/DM3
58	22-09-2015	**Machine Tool alignment Tests:** Requirements of machine tool alignment tests		1	DM1/DM6 & DM4
59	23-09-2015	Alignment tests on lathe		1	DM1/DM6
60	26-09-2015	Alignment tests on lathe		1	DM1/DM6 & DM4
61	28-09-2015	Alignment tests on milling		1	DM1/DM6 & DM4
62	29-09-2015	Alignment tests on milling		1	DM1/DM6
63	30-09-2015	Alignment tests on Drilling machine		1	DM2/DM3
64	01-10-2015	**Gear Measurement:** Gear measuring instruments		1	DM1/DM6 & DM4
65	03-10-2015	**Tutorial 11**		1	DM2/DM3
66	05-10-2015	Gear tooth profile measurement		1	DM1/DM6 & DM4
67	06-10-2015	Measurement of diameter, pitch		1	DM1/DM6
68	07-10-2015	Measurement of pressure angle and tooth thickness		1	DM1/DM6
69	08-10-2015	Parkinson's gear tester		1	DM2/DM3
70	10-10-2015	**Coordinate Measuring Machines:**		1	DM1/DM6 & DM4
71	12-10-2015	Basic principle, types and applications of CMM.		1	DM1/DM6 & DM4
72	13-10-2015	**Tutorial 12**		1	DM2/DM3
73	14-102015	Beyond Syllabus		1	DM1/DM6 & DM4
74	15-10-2015	Beyond Syllabus		1	DM1/DM6 & DM4

75	17-10-2015	Revision		1	DM2/DM3
	19-10-2015 to 24-10-2015	**DASARA HOLIDAYS**			
76	26-10-2015	Revision		1	DM1/DM6 & DM4
77	27-10-2015	Revision		1	DM2/DM3
78	28-10-2015	Revision		1	DM1/DM6 & DM4
79	29-10-2015	Revision		1	DM2/DM3
80	31-10-2015	Revision		1	DM2/DM3
	02-11-2015 to 07-11-2015	**II Mid Examinations**			
	09-11-2015 to 18-11-2015	**Preparation and Practicals**			
	19-11-2015 to 03-12-2015	**End Examinations**			
Total				80	
Total number of classes required to complete the syllabus				**72**	
Total number of classes available as per Schedule				**80**	

NOTE: DELIVERY METHODS (DM):
DM1: Lecture interspersed with discussions/BB
DM2: Tutorial
DM3: Lecture with a Quiz
DM4: Assignment/Test
DM5: Demonstration (laboratory, field visit)
DM6: Presentations/PPT

At the End of the course, students attained the **Course Outcomes: CO1, CO2, CO3, CO4, CO5** & sample proofs are enclosed in Course file.

CO1: Design & use effectively the instruments for measurements of linear, angular & flat surface Measurement.
CO2: Design & use effectively the Optical measuring instruments and Comparators.
CO3: Apply the concepts of Limits and Fits in designing Gauges.
CO4: Analyze measuring systems of surface roughness and screw thread measurement.
CO5: Analyze measuring systems of Gear Measurement and perform alignment/acceptance test effectively.

TEXT BOOK

Engineering Metrology / R.K. Jain / Khanna Publishers.

REFERENCES

1. Engineering Metrology / I C Gupta./ Danpath Rai
2. A text book of Metrology /M. Mahajan/ Dhanpat Rai & Co

	Course Instructor	Course Coordinator	Module Coordinator	Programme Coordinator
Signature				

LAB SCHEDULE

Course Name: METROLOGY & INSTRUMENTATION LAB **Programme: B.Tech VII Sem (B SEC)**
Department: MECHANICAL ENGINEERING **A.Y : 2015-16**

Date	A 13	A 14	A 15	A 16	A 17	A 18	A 19	A 20	A 21	A 22	A 23	A 24
22/06/2015	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration
29/06/2015	M1	M2	M3	M4	M5	M6	In 1	In 2	In 3	In 4	In 5	In 6
06/07/2015	M2	M3	M4	M5	M6	M1	In 2	In 3	In 4	In 5	In 6	In 1
13/07/2015	M3	M4	M5	M6	M1	M2	In 3	In 4	In 5	In 6	In 1	In 2
20/07/2015	M4	M5	M6	M1	M2	M3	In 4	In 5	In 6	In 1	In 2	In 3
27/07/2015	M5	M6	M1	M2	M3	M4	In 5	In 6	In 1	In 2	In 3	In 4
06/08/2015	M6	M1	M2	M3	M4	M5	In 6	In 1	In 2	In 3	In 4	In 5
13/08/2015	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration	Demonstration
27/08/2015	In 1	In 2	In 3	In 4	In 5	In 6	M1	M2	M3	M4	M5	M6
07/09/2015	In 2	In 3	In 4	In 5	In 6	In 1	M2	M3	M4	M5	M6	M1
14/09/2015	In 3	In 4	In 5	In 6	In 1	In 2	M3	M4	M5	M6	M1	M2
21/09/2015	In 4	In 5	In 6	In 1	In 2	In 3	M4	M5	M6	M1	M2	M3
05/10/2015	In 5	In 6	In 1	In 2	In 3	In 4	M5	M6	M1	M2	M3	M4
12/10/2015	In 6	In 1	In 2	In 3	In 4	In 5	M6	M1	M2	M3	M4	M5

	Course Instructor	Lab Incharge	Module Coordinator	Programme Coordinator	HoD
Signature					

LESSON PLAN

Course Code& Course Name: T247 MECHANICAL MEASUREMENTS **SEM:** VII

Programme: B.Tech **Department:** MECH

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
		UNIT-I:			
1.	**1-6-15**	introduction		1	DM1,DM6
2.	**2-6-15**	introduction		1	DM1
3.	**3-6-15**	Fundamental methods of measurements		1	DM1
4.	**5-6-15**	Basic elements of measurement system		1	DM1
5.	**6-6-15**	**Tutorial-1**		1	DM2
6.	**8-6-15**	Generalized measurement system		1	DM1
7.	**9-6-15**	Performance terms		1	DM1
8.	**10-6-15**	Performance terms		1	DM1
9.	**12-6-15**	Basic concepts in dynamic measurements		1	DM1,DM6
10.	**15-6-15**	**Tutorial-2**		1	DM2
11.	**16-6-15**	Causes and types of experimental errors		1	DM1
12.	**17-6-15**	Causes and types of experimental errors		1	DM1
13.	**19-6-15**	Uncertainty analysis		1	DM1
14.	**20-6-15**	Uncertainty analysis		1	DM1
15.	**22-6-15**	**Tutorial-3**		1	DM2
16.	**23-6-15**	Method of least squares		1	DM1
17.	**24-6-15**	Graphical analysis		1	DM4
18	**26-6-15**	Curve fitting		1	DM1
19	**27-6-15**	Curve fitting		1	DM1
20	**29-6-15**	**Tutorial-4**		1	DM2
21		**Unit-2**			
22	**30-6-15**	Introduction of stress and strain measurement		1	DM1
23	**1-7-15**	Strain measurements		1	DM1
24	**3-7-15**	Electrical resistance strain gauge		1	DM1
25	**4-7-15**	Electrical resistance strain gauge		1	DM1
26	**6-7-15**	**Tutorial-5**		1	DM2
27	**7-7-15**	Gauge factor		1	DM1
28	**8-7-15**	Measurement of resistance strain gauge outputs		1	DM1
29	**10-7-15**	Temperature compensation		1	DM1
30	**13-7-15**	Strain-gage rossettes		1	DM1
31	**14-7-15**	**Tutorial-6**		1	DM2
32	**15-7-15**	Introduction of displacement measurement		1	DM1
33	**17-7-15**	classification		1	DM1
34	**20-7-15**	Dimensional measurement		1	DM3,DM4
35	**21-7-15**	Gage blocks		1	DM1
36	**22-7-15**	**Tutorial-7**		1	DM2
37	**24-7-15**	Optical methods		1	DM1

38	**25-7-15**	Optical methods		1	DM1
39	**27-7-15**	Pneumatic gage		1	DM1
40	**28-7-15**	Introduction of Force and Torque measurement		1	DM1
41	**29-7-15**	**Tutorial-8**		1	DM2
42	**31-7-15**	Elastic transducer		1	DM1
43	**1-8-15**	Elastic transducer		1	DM1
44	**3-8-15**	Strain gauge load cells		1	DM1
45	**4-8-15**	Strain gauge load cells		1	DM1
46	**5-8-15**	**Tutorial-9**		1	DM2
47	**7-8-15**	dynamometers		1	DM4
48	**8-8-15**	Classification of dynamometers		1	DM1
49	**10-8-15**	Mechanical dynamometers		1	DM1, DM6
50	**11-8-15**	Hydraulic dynamometers		1	DM1, DM6
51	**12-8-15**	Tutorial-10		1	DM2
52	**14-8-15**	Electrical dynamometer		1	DM1, DM6
53		**Unit-3**			
54	**24-8-15**	Introduction of pressure measurement		1	DM1
55	**25-8-15**	Barometers, Manometers		1	DM1
56	**26-8-15**	Dail type pressure gauge		1	DM1
57	**28-8-15**	**Tutorial-11**		1	DM2
58	**31-8-15**	Pressure transducers		1	DM1
59	**1-9-15**	Pitot-static		1	DM1
60	**2-9-15**	Pitot-static and its characteristics		1	DM1
61	**4-9-15**	Low pressure measurement gauges		1	DM1
62	**7-9-15**	**Tutorial-12**		1	DM2
63	**8-9-15**	Introduction of fluid flow measurement		1	DM1
64	**9-9-15**	rotameter		1	DM1
65	**11-9-15**	Turbine flow meter		1	DM1
66	**14-9-15**	Laser Doppler measurement		1	DM1
65	**15-9-15**	**Tutorial-13**		1	DM2
66	**16-9-15**	Hot-wire anemometer		1	DM1
67	**18-9-15**	Flow visualization methods		1	DM1, DM6
		Unit-4			
68	**19-9-15**	Types of thermometer		1	DM1
69	**21-9-15**	Thermocouples, RTD		1	DM1
70	**22-9-15**	**Tutorial-14**		1	DM2
71	**23-9-15**	thermisters		1	DM1
72	**25-9-15**	pyrometers		1	DM1
73	**26-9-15**	Sling psychrometer		1	DM1, DM6
74	**28-9-15**	Absorption psychrometer		1	DM1, DM6
75	**29-9-15**	**Tutorial-15**		1	DM2
76	**30-9-15**	Dew point temperature		1	DM1
		Unit-5			
77	**3-10-15**	Introduction of speed measurement		1	DM1
78	**5-10-15**	Mechanical tachometers		1	DM1, DM6
79	**6-10-15**	Electrical tachometers		1	DM1, DM6
80	**7-10-15**	**Tutorial-16**		1	DM2

81	**9-10-15**	stroboscope		1	DM1
82	**12-10-15**	Non contact type of tachometer		1	DM1, DM6
83	**14-10-15**	Introduction to vibration and motion measurement		1	DM1
84	**16-10-15**	Elementary vibrometers		1	DM1
85	**17-10-15**	Elementary accelerometer		1	DM1
86	**26-10-15**	Seismic instruments		1	DM1, DM6
87	**27-10-15**	Sound measurement		1	DM1
88	**28-10-15**	revision		1	DM1
89	**30-10-15**	revision		1	DM1
90	**31-10-15**	revision		1	DM1
Total number of classes required to complete the syllabus				**90**	**Prin**
Total number of classes available as per Schedule				**90**	**Prin**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment/Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations/PPT

At the End of the course, students attained the **Course Outcomes:CO1,CO2,CO3,CO4,CO5** & sample proofs are enclosed in Course file.

Signature			
	Name of the Faculty	**Name of Course Co-ordinator**	**HOD**